WHAT IS CLAIMED IS:

1. A method for detecting protein-protein interaction between a first test polypeptide and a second test polypeptide, comprising:

introducing into a host cell a first chimeric gene and a second chimeric gene, said first chimeric gene encoding a first fusion protein having said first test polypeptide, an N-intein, and a first inactive reporter polypeptide fused to the N-terminus of an N-intein, said second chimeric gene encoding a second fusion protein having said second test polypeptide, a C-intein, and a second inactive reporter polypeptide fused to the C-terminus of said C-intein, wherein ligation between the C-terminus of said first inactive reporter polypeptide and the N-terminus of said second inactive reporter polypeptide forms an active reporter protein, wherein said first and second chimeric genes further contain a nucleotide sequence encoding an amino acid sequence capable of enabling the expressed first and second fusion proteins to anchor within the cell membrane of the host cell such that said first and second test polypeptides are exposed outside the cell while the inactive reporters and the N-intein and C-intein are retained within the cell;

expressing said first fusion protein and said second fusion protein in said host cell; and

detecting said active reporter protein.

2. The method of Claim 1, wherein said first inactive reporter polypeptide is an N-terminal fragment of said active reporter protein and said second inactive reporter polypeptide is the remaining C-terminal fragment of said active reporter protein.

3. The method of Claim 1, wherein said host cell is a diploid yeast cell and said step of introducing into said host cell said first chimeric gene and said second chimeric gene comprises mating a first haploid yeast cell having said first chimeric gene with a second haploid yeast cell having said second chimeric gene.

4. The method of Claim 1, wherein said first test polypeptide is fused to the N-terminus of a first transmembrane domain which is fused to the N-terminus of said first

inactive reporter polypeptide that is fused to the N-terminus of said N-intein in said first fusion protein.

5. The method of Claim 1, wherein said second test polypeptide is fused to the N-terminus of a second transmembrane domain which is fused to the N-terminus of said C-intein that is fused to the N-terminus of said second inactive reporter in said second fusion protein

6. The method of Claim 1, wherein said active reporter protein is detectable by a color assay.

7. The method of Claim 6, wherein said active reporter protein is selected from the group consisting of β-galactosidase, luciferase, green fluorescence protein, blue fluorescence protein, alkaline phosphotase, horseradish peroxidase, and derivatives thereof.

8. The method of Claim 1, wherein said active reporter protein is an auxotrophic protein and is detectable by a cell viability assay.

9. The method of Claim 8, wherein the host cell is a yeast cell deficient in *URA3* gene, and wherein the first inactive reporter and second inactive reporter are an N-terminal portion and an C-terminal portion of orotidine-5'-phosphate decarboxylase, which is encoded by *URA3* gene.

10. A method for detecting protein-protein interaction between a first test polypeptide and a second test polypeptide, comprising:

introducing into a host cell a first chimeric gene and a second chimeric gene, said first chimeric gene encoding a first fusion protein having a first test polypeptide fused to the N-terminus of a first transmembrane domain which is fused to the N-terminus of a first inactive reporter polypeptide that is fused to the N-terminus of an N-intein, said second chimeric gene encoding a second fusion protein having a second test polypeptide

fused to the N-terminus of a second transmembrane domain which is fused to the N-terminus of a C-intein that is fused to the N-terminus of a second inactive reporter,

wherein when expressed in said host cell said first and second fusion proteins are anchored within the cell membrane of the host cell with said first and second test polypeptides being exposed to the outside the cell and the inactive reporters and the N-intein and C-intein being retained within the cell,

wherein ligation between the C-terminus of said first inactive reporter polypeptide and the N-terminus of said second inactive reporter polypeptide forms an active reporter protein, and

wherein said host cell lacks said active reporter;

expressing said first fusion protein and said second fusion protein in said host cell; and

detecting said active reporter protein.

11. A method for identifying a cellular receptor of a secreted protein ligand, comprising:

providing a prey fusion protein library comprising a plurality of prey fusion proteins expressed in a plurality of prey haploid yeast cells of a first mating type, wherein each of said prey fusion proteins contains a prey test polypeptide, an N-intein, and a first inactive reporter polypeptide fused to the N-terminus of an N-intein, and a first amino acid sequence which enables the prey fusion protein to anchor within the cell membrane of the host cell with said prey test polypeptide being exposed outside the cell and the first inactive reporter and the N-intein being retained within the cell;

providing a plurality of bait haploid yeast cells having a mating type opposite to that of said prey haploid yeast cell, said bait haploid yeast cells expressing a bait fusion protein having said secreted protein ligand, a C-intein, a second inactive reporter polypeptide fused to the C-terminus of said C-intein,, and a second amino acid sequence which enables the bait fusion protein to anchor within the cell membrane of the host cell with said protein ligand being exposed outside the cell and the second inactive reporter and the C-intein being retained within the cell, wherein ligation between the C-terminus

of said first inactive reporter polypeptide and the N-terminus of said second inactive reporter polypeptide forms an active reporter protein;

mating said plurality of bait haploid yeast cells and said plurality of prey haploid yeast cells; and

detecting said active reporter protein.

12. A method for selecting compounds capable of interfering with a protein-protein interaction in extracellular space, comprising:

introducing into an yeast cell a first chimeric gene and a second chimeric gene, said first chimeric gene encoding a first fusion protein having said first test polypeptide, an N-intein, and a first inactive reporter polypeptide fused to the N-terminus of an N-intein, said second chimeric gene encoding a second fusion protein having said second test polypeptide, a C-intein, and a second inactive reporter polypeptide fused to the C-terminus of said C-intein, wherein ligation between the C-terminus of said first inactive reporter polypeptide and the N-terminus of said second inactive reporter polypeptide forms an active reporter protein, wherein said first and second chimeric genes further contain a nucleotide sequence encoding an amino acid sequence capable of enabling the expressed first and second fusion proteins to anchor within the cell membrane of the host cell with said first and second test polypeptides being exposed outside the cell and the inactive reporters and the N-intein and C-intein being retained within the cell;

expressing said first fusion protein and said second fusion protein in said yeast cell in the presence of one or more test compounds; and

detecting said active reporter protein.

13. The method of Claim 12, wherein said first inactive reporter polypeptide is an N-terminal fragment of said active reporter protein and said second inactive reporter polypeptide is the remaining C-terminal fragment of said active reporter protein.

14. The method of Claim 12, wherein said host cell is a diploid yeast cell and said step of introducing into said host cell said first chimeric gene and said second

chimeric gene comprises mating a first haploid yeast cell having said first chimeric gene with a second haploid yeast cell having said second chimeric gene.

15. The method of Claim 12, wherein said first test polypeptide is fused to the N-terminus of a first transmembrane domain which is fused to the N-terminus of said first inactive reporter polypeptide that is fused to the N-terminus of said N-intein in said first fusion protein.

16. The method of Claim 12, wherein said second test polypeptide is fused to the N-terminus of a second transmembrane domain which is fused to the N-terminus of said C-intein that is fused to the N-terminus of said second inactive reporter in said second fusion protein

17. The method of Claim 12, wherein said active reporter protein is detectable by a color assay.

18. The method of Claim 17, wherein said active reporter protein is selected from the group consisting of β-galactosidase, luciferase, green fluorescence protein, blue fluorescence protein, alkaline phosphotase, horseradish peroxidase, and derivatives thereof.

19. The method of Claim 12, wherein said active reporter protein is an auxotrophic protein and is detectable by a cell viability assay.

20. The method of Claim 19, wherein the host cell is a yeast cell deficient in *URA3* gene, and wherein the first inactive reporter and second inactive reporter are an N-terminal portion and an C-terminal portion of orotidine-5'-phosphate decarboxylase, which is encoded by *URA3* gene.